



A.D. 1862, *15th May.* N^o 1469.

S P E C I F I C A T I O N

OF

GEORGE HENRY BIRKBECK.

APPARATUS FOR CONSUMING SMOKE.

LONDON:

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A.D. 1862, 15th *MAY*. N° 1469.

Apparatus for Consuming Smoke.

LETTERS PATENT to George Henry Birkbeck, of the Firm of Tongue and Birkbeck, of 34, Southampton Buildings, Chancery Lane, in the County of Middlesex, Patent Agents and Engineers, for the Invention of “**IMPROVEMENTS IN APPARATUS FOR CONSUMING SMOKE.**”—A communication from abroad by M. Etienne Deshurand, Ironfounder, and Madame Anais Lemercier, of Paris, in the Empire of France.

Sealed the 7th November 1862, and dated the 15th May 1862.

PROVISIONAL SPECIFICATION left by the said George Henry Birkbeck at the Office of the Commissioners of Patents, with his Petition, on the 15th May 1862.

I, GEORGE HENRY BIRKBECK, of the Firm of Tongue and Birkbeck, of 34,
5 Southampton Buildings, Chancery Lane, in the County of Middlesex, Patent Agents and Engineers, do hereby declare the nature of the Invention for “**IMPROVEMENTS IN APPARATUS FOR CONSUMING SMOKE,**” to be as follows :—

This Invention has for its object improvements in apparatus applicable to furnaces or fire-places for the consumption of the smoke arising from the
10 combustion of the fuel consumed therein. For this purpose the grate or fire-bar surface is formed with a hollow or recess (by preference of a curved or concave form), but it may be of conical, or pyramidal, or other suitable shape if desired, commencing from and in the “dead” plate, and inclined from the front upwards towards the back of the furnace or fire-place. This hollow

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channel or passage is prolonged outwards from the front of the furnace, forming a conduit or conductor, and it is furnished with a receptacle made of sheet iron, which receives and retains the fuel till required to supply the fire, the fuel being fed or pushed forward therein, and fed into the furnace by means of a piston actuated by a screw or otherwise. The unignited fuel as it 5 is forced forward into the furnace, is caused to pass underneath the ignited or incandescent fuel, and as the smoke and gases are generated they become ignited and consumed; the fuel, by the hollow or recess being conical or inclined, is gradually distributed over the surface of the fire-bars. In large furnaces two or more feeding channels or passages, and apparatus to force and 10 conduct the fuel into the furnace, may be employed if required.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said George Henry Birkbeck, in the Great Seal Patent Office on the 13th November 1862.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, GEORGE 15 HENRY BIRKBECK, of the Firm of Tongue & Birkbeck, of 34, Southampton Buildings, Chancery Lane, in the County of Middlesex, Patent Agents and Engineers, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fifteenth day of May, in the year of our Lord One 20 thousand eight hundred and sixty-two, in the twenty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said George Henry Birkbeck, Her special licence that I, the said George Henry Birkbeck, my executors, administrators, and assigns, or such others as I, the said George Henry Birkbeck, my executors, administrators, and assigns, 25 should at any time agree with and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN APPARATUS FOR CONSUMING SMOKE**," a communication to me 30 from abroad by M. Etienne Deshurand, Ironfounder, and Madame Anais Lemercier, of Paris, in the Empire of France, upon the condition (amongst others) that I, the said George Henry Birkbeck, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said 35 Invention, and in what manner the same was to be performed, and cause

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the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said George Henry Birkbeck, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

This Invention has for its object improvements in apparatus applicable to furnaces or fire-places for the consumption of the smoke arising from the combustion of the fuel consumed therein. For this purpose the grate or fire-bar surface is formed with a hollow or recess, by preference of a curved or concave form, but it may be of conical, or pyramidal, or other suitable shape if desired, commencing from and in the “dead plate,” and inclined from the front upwards towards the back of the furnace or fire-place. This hollow channel or passage is prolonged outwards from the front of the furnace, forming a conduit or conductor, and it is furnished with a receptacle made of sheet iron, which receives and retains the fuel till required to supply the fire, the fuel being fed or pushed forward therein, and fed into the furnace by means of a piston actuated by a screw or otherwise. The unignited fuel, as it is forced forward into the furnace, is caused to pass underneath the ignited or incandescent fuel, and, as the smoke and gases are generated, they become ignited and consume the fuel, by the hollow or recess being conical or inclined is gradually distributed over the surface of the fire-bars. In large furnaces two or more feeding channels or passages, and apparatus to force and conduct the fuel into the furnace, may be employed if required.

And in order that the Invention may be most fully understood and readily carried into effect, I will proceed to describe the Drawing hereunto annexed.

DESCRIPTION OF THE DRAWING.

Figure 1 is a longitudinal section of apparatus arranged and constructed according to this Invention, shewn as applied to a furnace suitable for baking porcelain; Figure 2 shews a plan, and Figure 3 a transverse section of the same. G is the fire-bar surface of the furnace, composed of the flat or horizontal parts *g, g*, at each side, and of the hollow central part *G*¹, which it is preferred should approximate to the form of a section of a truncated cone, the point of which is placed at or near to the fire-bridge. The larger end of the hollow part *G*¹, toward the front part of the furnace, corresponds in form with the conducting passage or channel *C*, made of metal or other suitable material. The conductor or channel *C* is prolonged outside the furnace, and serves to receive the successive charges of fuel to supply the fire, the fuel being

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forced up on to the fire-bars by the piston or plunger B. The piston B is connected to the screw A, turning in the support D, and is guided to and fro along the channel *c* by rollers *b, b*, and guides *a*, as shewn; the support D acting as a nut to the screw A. E is a fly-wheel and handle to give motion to the screw A and piston B. By thus forcing in the fresh fuel below the level of the fire-bars *g*, underneath the highly ignited fuel in the furnace, the smoke and products of combustion as they are evolved, are effectively consumed in passing through the upper layer of incandescent fuel.

Apparatus such as above described will be found highly advantageous in its application to furnaces for baking earthenware, and may be readily adapted to 10 boiler and other furnaces for metallurgical or other purposes.

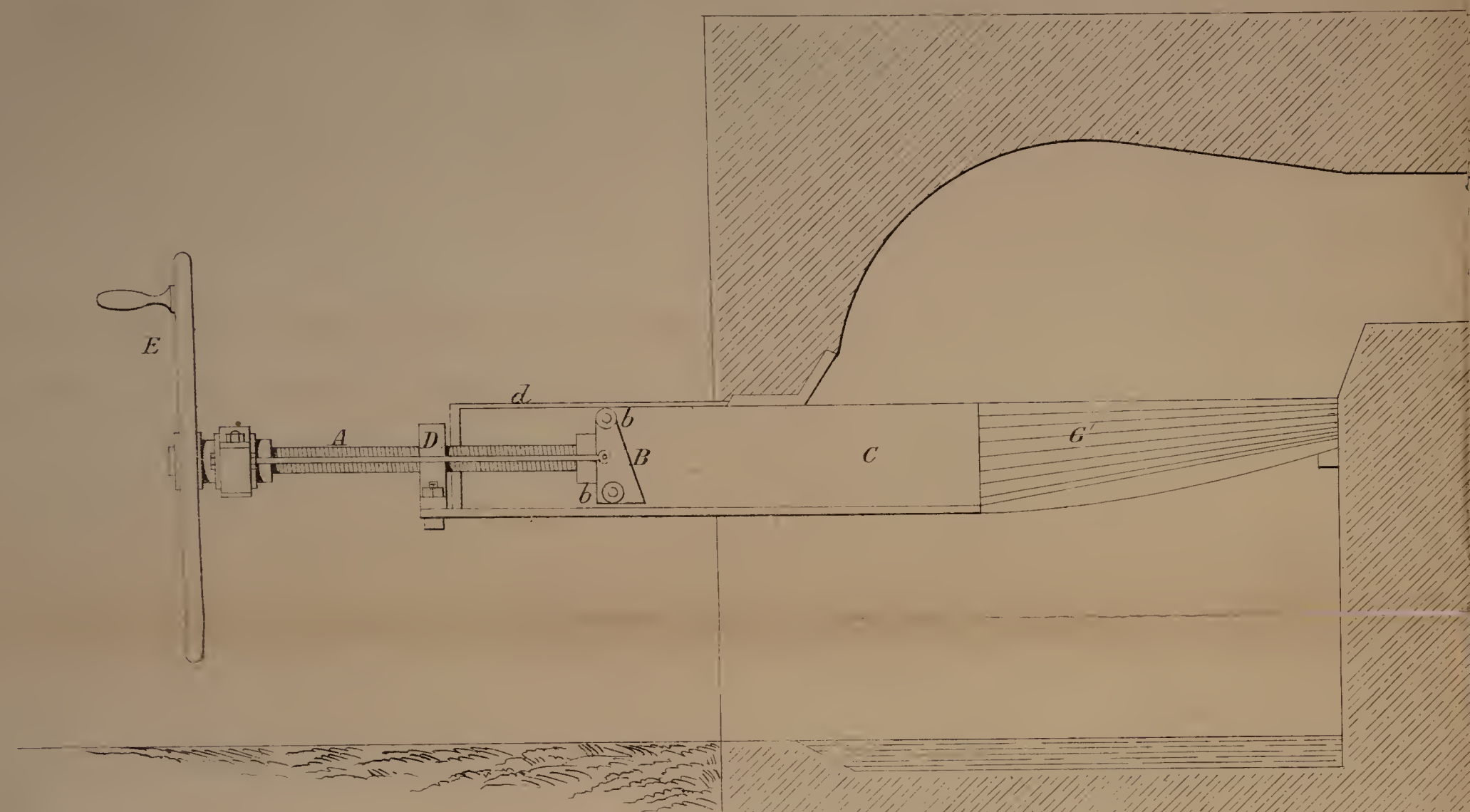
In witness whereof, I, the said George Henry Birkbeck, have hereunto set my hand and seal, this Tenth day of November, in the year of our Lord One thousand eight hundred and sixty-two.

GEORGE H. BIRKBECK. (L.S.) 15

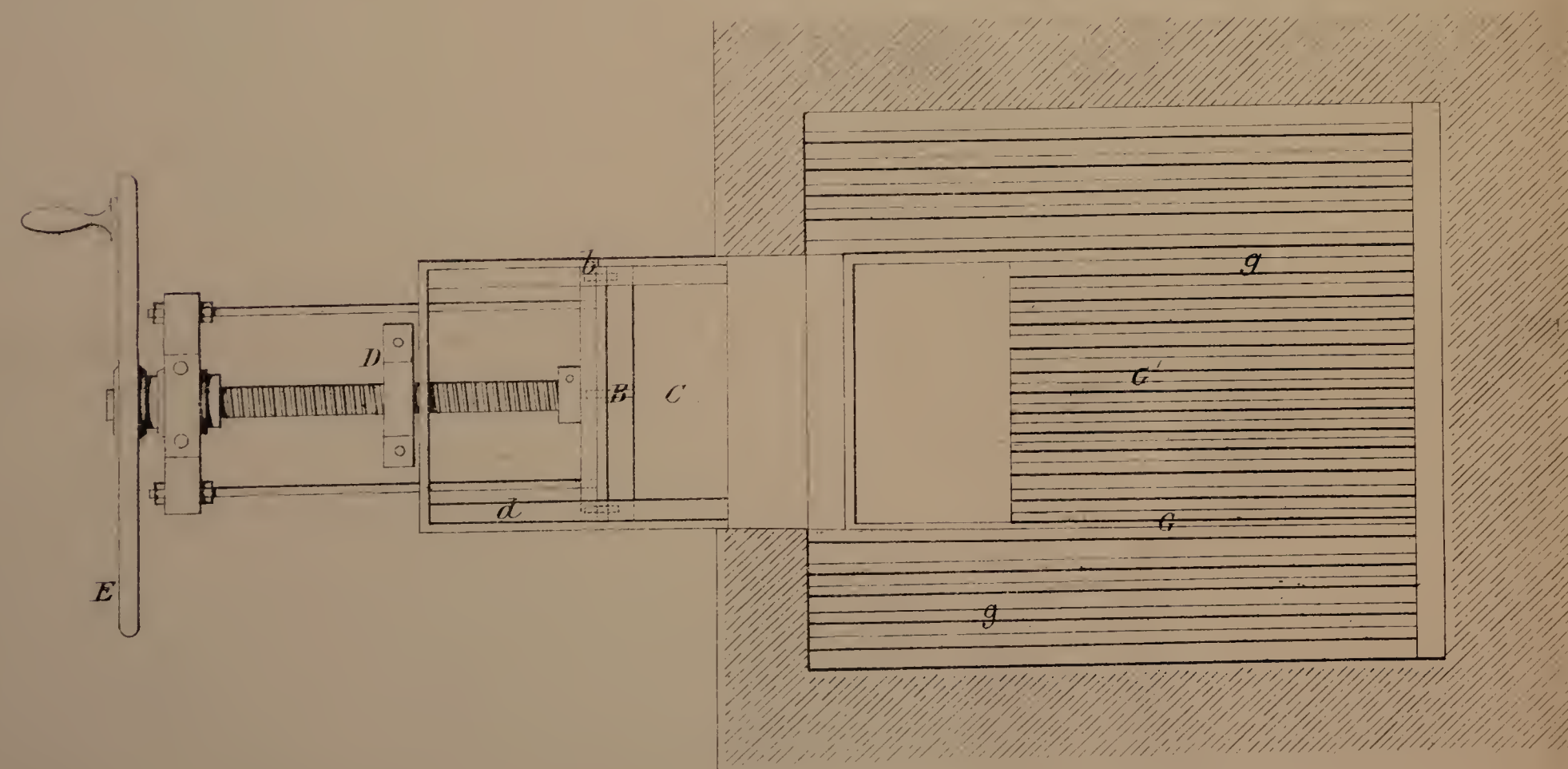
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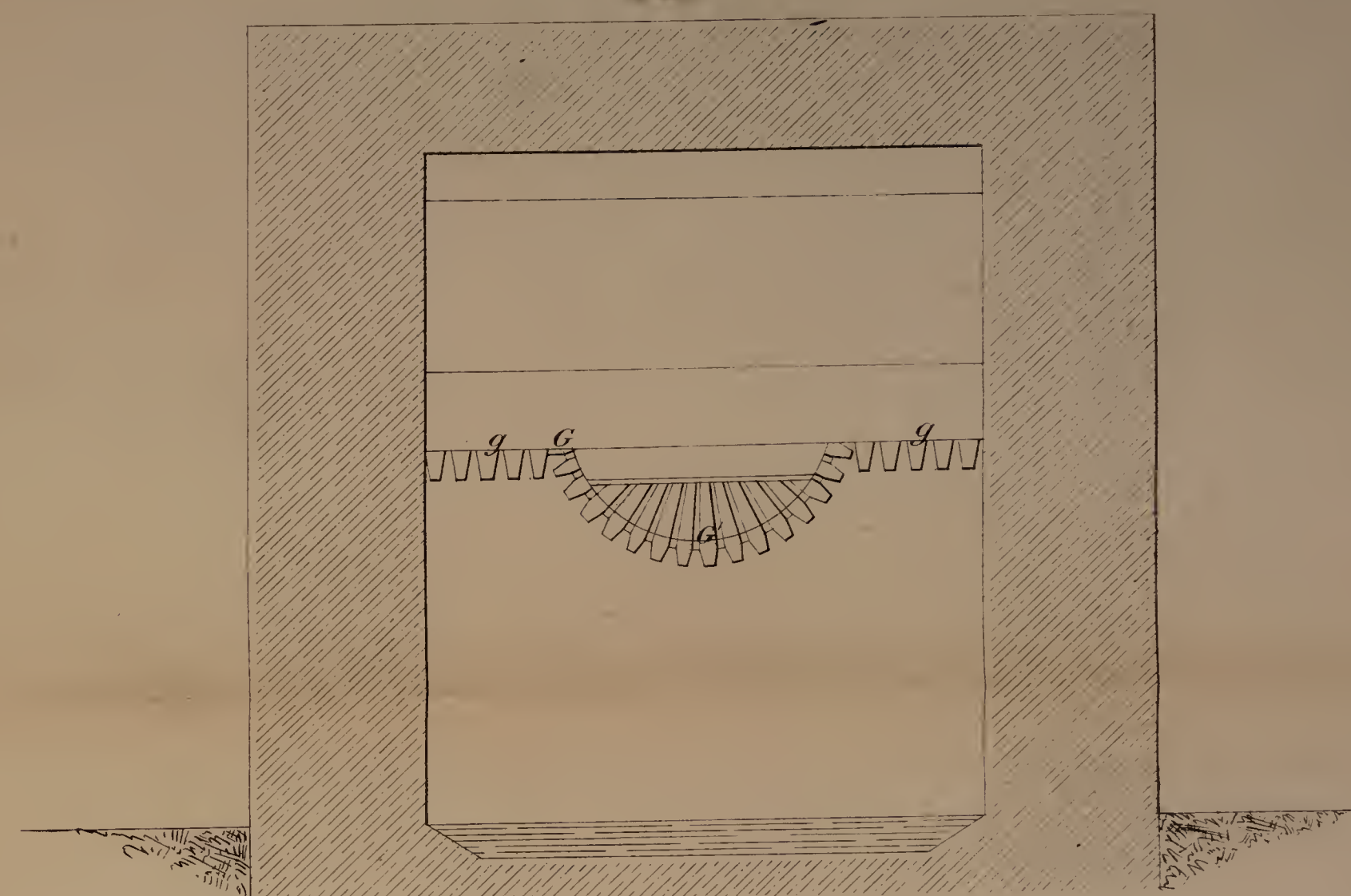
FIC. 1.



FIC. 2.



FIC. 3.



The filed drawing is partly colored

